IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	:	Examiner: TBD
ZIEMANN ET AL.	)	
	:	Group Art Unit: TBD
Application No.: TBD	)	
	:	
Filed: Herewith	)	
	:	
For: PROCESSING OF TREE DATA	)	
STRUCTURES	:	March 17, 2004

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION TO MAKE SPECIAL UNDER 37 C.F.R. § 1.102

Sir:

It is respectfully requested that the above-captioned patent application, filed

herewith, be granted Special Status for accelerated Examination. As set forth in

MPEP § 708.02(VIII), such a petition requires: (1) that all claims be directed to a single

invention; (2) a pre-examination search; (3) copies of all of the references identified in the search

deemed most closely related to the claimed subject matter; (4) a detailed discussion pointing out

with particularity how the claimed subject matter is patentable over the references; and (5) the

fee set forth in 37 C.F.R. 1.17(h). As presented in more detail below, Applicants have compiled

with each of these requirements and respectfully request granting of this petition.

I.   APPLICANTS' CLAIMED INVENTION

Applicants' claimed invention includes four independent claims 1, 8, 16, and 23 directed to either a method or system for processing a collection of tree data structures.

Independent Claim 1 relates to a method for processing a collection of tree data structures in a computer-readable database. The method includes identifying a set of trees in the collection of tree data structures, each tree in the set of trees having a same structure. The method also includes forming a pattern having the same structure as each tree in the set of trees, and processing the pattern.

Independent Claim 8 is directed to a method for processing a collection of tree data structures in a computer-readable database. This method includes partitioning the collection of tree data structures into disjoint sets of trees, each set of trees including trees of a same structure. The method also includes forming a set of patterns, each pattern corresponding to one of the sets of trees, and each pattern having the same structure as its corresponding set of trees. Further, the method includes processing the set of patterns.

Independent Claim 16 relates to a system for processing a collection of tree data structures. The system includes a database component and a processing component. The database component is operative to maintain a database including the collection of tree data structures. The processing component is communicatively connected to the database component. The processing component is programmed to perform actions including identifying, by communicating with the database component, a set of trees in the collection of tree data structures, each tree in the set of trees having a same structure. The processing component also forms a pattern having the same structure as each tree in the set of trees and processes the pattern.

Independent Claim 23 is directed to a system for processing a collection of tree data structures. The system includes a database component and a processing component. The database component is operative to maintain a database including the collection of tree data structures. The processing component is communicatively connected to the database component. The processing component is programmed to perform actions including partitioning the collection of tree data structures in the database into disjoint sets of trees, each set of trees comprising trees having a same structure, and the partitioning being assisted by communicating with the database component. The processing component also forms a set of patterns, each pattern corresponding to one of the sets of trees, and each pattern having the same structure as its corresponding set of trees. Additionally, the processing component processes the set of patterns.

II. THE PATENT APPLICATION PRESENTS CLAIMS TO A SINGLE INVENTION

The claims of the patent application filed herewith are directed to a single invention. The current application includes method and system claims, all of which are directed to processing a collection of tree data structures. Should the Examiner determine that the claims are not directed to a single invention, Applicants will make an election without traverse according to established telephone-restriction practice, MPEP § 708.02(VII).

III. PRE-EXAMINATION SEARCH

A pre-examination search was performed by the professional search firm of Gilman Research Services, LLC ("Gilman") to locate published documents relevant to the inventive concept (the "Search"). Gilman is located at 42 West 24th Street, New York, NY 10010 and can be reached at 212-675-9655. The Search Report at page 2 describes Gilman's

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searching strategy as well as the USPTO classes and subclasses searched. The Search Report

identified the references listed below. For sake of convenience, the references will be identified

by the reference numbers also listed below.

Document	Author/Inventor	Date Published/Issued	Reference Number
US 6,014,671	Castelli et al.	1/11/2000	1
US 6,356,920	Vandersluis	3/12/2002	2
US 6,411,957	Dijkstra	6/25/2002	3
US 6,418,446	Lection et al.	7/9/2002	4
US 6,532,467	Brocklebank et al.	3/11/2003	5
US 6,571,249	Garrecht et al.	5/27/2003	6
US 6,578,129	DaSilva et al.	6/10/2003	7
US 6,591,260	Schwarzhoff et al.	7/8/2003	8
US 2002/0083034	Orbanes et al.	6/27/2002	9
US 2002/0143774	Vandersluis	10/3/2002	10
US 2003/0014421	Jung	1/16/2003	11
US 2003/0050931	Harman et al.	3/13/2003	12
US 2003/0088593	Stickler	5/8/2003	13
US 2003/0126151	Jung	7/3/2003	14
US 2003/0131007	Schirmer et al.	7/10/2003	15
US 2003/0167266	Saldanha et al.	9/4/2003	16
Genetic Algorithms for Optimal Logical Database Design	P. Van Brommel et al.	12/13/1994	17
ERDRAW: An XML-based ER-diagram Drawing	S. Xu et al.		18

and Translation			
A Self-Stabilizing Distributed Branch-and-Bound Algorithm	N. Yahfoufi et al.		19
Model for Worldwide Tracking of Distributed Objects	M. van Steen et al.		20
GiST: A Generalized Search Tree for Database Systems	J. Hellerstein	1/19/1996	21
Tree-Structured Indexes	R. Ramakrishhan		22
Improving Index Performance through Prefetching	S. Chen et al.	12/2000	23

Copies of Gilman Search Report and the identified references are attached hereto.

Nothing in this Petition should be construed as an admission that any reference identified in the Search or discussed herein is available as prior art to the above-captioned application.

IV.   DETAILED DISCUSSION OF PATENTABILITY

The claimed subject matter of the above-captioned patent application is patentable over all of the cited references. Applicants provide a detailed discussion in this Section that points out with particularity how the claimed subject matter is patentable over the cited references. As will be discussed, most of the cited references do not pertain to processing a collection of tree data structures by forming a pattern having the same structure as trees in a set of trees, and processing the pattern, as required by the claims. By processing the patterns, in lieu of processing every tree in the collection of trees, substantial processing time is saved. For at

least this reason, the claimed invention is respectfully submitted to be patentable over the cited references.

A.   References that Relate to One or More Trees, but Do Not Teach or Suggest Processing a Collection of Tree Data Structures by Forming a Pattern Having the Same Structure as Trees in a Set of Trees, and Processing the Pattern

1.   Reference 17: "Genetic Algorithms for Optimal Logical Database Design," by van Bommel et al.

Reference 17 presents "a genetic algorithm for the optimization of (internal) database structures . . . [and] shows how the solution space of the algorithm can be set up in the form of tree structures (forests). Genetic operators (database transformations) defined in terms of this encoding behave as if they manipulate tree structures." Abstract. The genetic operators disclosed are "Move" and "Promote" mutations and two different crossover operators. *See* Section 4.3. However, Applicants have not found any disclosure relating to processing a collection of tree data structures by forming a pattern having the same structure as trees in a set of trees, and processing the pattern.

2.   Reference 6: U.S. Patent No. 6,571,249 (Garrecht et al.)

Reference 6 discloses a system for managing query results, wherein the query results are broken up into manageable sized units that can be easily processed by a typical human brain. *See* abstract and Col. 6, lines 21-43. The results, which themselves are not trees, are formed into a tree structure wherein the leaf nodes each correspond to a query result. *See* Abstract. This references also discloses a tree data structure at col. 17, lines 31-36 and FIG. 19, which shows each layer of the tree being stored in a separate logical component. Although this

reference discloses a tree formed by query results, it does not relate to processing a collection of tree data structures by forming a pattern having the same structure as trees in a set of trees, and processing the pattern.

3. Reference 7: U.S. Patent Application No.: 6,578,129:

Reference 7 relates to optimized virtual memory management ("VMM") for dynamic data types in an embedded processor context. The design choices for the VMM ("search space") are depicted as a group of disjunct trees. *See* col. 15, lines 21-29. Each of the trees represents a design choice and the leaves of a tree represent the design options of the corresponding design choice. *Id.* A selected set of individual leaves, each from a disjunct tree, defines a valid VMM scheme. *Id.* Based on this disjunct tree search space, a "methodology is proposed that takes into account characteristics of the applications to prune the search space and guide the choices of a VMM for data dominated applications." Abstract. Although the search space of this reference is depicted as a set of disjunct trees, processing a collection of tree data structures by forming a pattern having the same structure as trees in a set of trees, and processing the pattern, is not taught or suggested.

4. Reference 21: "GiST: A Generalized Search Tree for Database Systems"

Reference 21 discloses an abstract data type for a generalized search tree, including key methods, queries, searching techniques, and insertion and delete functions for use with the abstract data type. This reference, although pertaining to a generalized search tree, does not teach or suggest processing a collection of trees, as does the present invention. For instance, the insert and delete functions pertain to inserting and deleting a leaf from a tree, and are not functions performed on a collection of trees. Accordingly, Applicants respectfully submit that

this reference does not teach or suggest processing a collection of tree data structures by forming a pattern having the same structure as trees in a set of trees, and processing the pattern, as required by the claims.

B.   Additional References that Pertain to Trees, but Do Not Teach or Suggest Processing a Collection of Tree Data Structures by Forming a Pattern Having the Same Structure as Trees in a Set of Trees, and Processing the Pattern

References 1, 3, 4, 5, 9, 12, 16, 19, 20, 22, and 23 are also understood to relate to trees, but not to processing a collection of tree data structures by forming a pattern having the same structure as trees in a set of trees, and processing the pattern.

Reference 1 discloses a method for representing and retrieving multi-dimensional data such as large satellite images. Abstract. The data may be broken up into a view element hierarchy data structure. Col. 8, lines 64-66. Reference 3 pertains to organizing nodes within *a* tree structure. Reference 4 relates to a method for grouping of dynamic data using XML, wherein an input Document Object Model ("DOM") tree is used to create an output DOM tree. Abstract. Reference 5 discloses a method for selecting node variables in a binary decision tree structure. Reference 9 relates to viewing information having hierarchical relationships. Reference 12 receives content as input, converts the content into a Document Object Model ("DOM") tree, and translates the DOM tree into a markup language that is formatted for display. Reference 16 discloses taking plain text as input and converting it into a tree structure based upon its grammatical components. Reference 19 relates to a self-stabilizing distributed branch-and-bound algorithm which finds the optimal solution in a search space decomposed into a tree structure. *See* Section 1, Introduction. Reference 20 discloses a model for worldwide tracking of distributed objects based upon a worldwide distributed search tree that adapts dynamically to

individual migration patterns of constituent objects. Abstract. Reference 22 discusses searching a binary tree using an index file. *See* page 3. Reference 23 pertains to improving binary search tree index performance using a prefetching technique.

Applicants respectfully submit that none of these references teach or suggest processing a collection of tree data structures by forming a pattern having the same structure as trees in a set of trees, and processing the pattern, as required by the claims.

C.   The Remaining References:

The remaining cited references also have not been found to teach or suggest processing a collection of tree data structures by forming a pattern having the same structure as trees in a set of trees, and processing the pattern, as required by the claims.
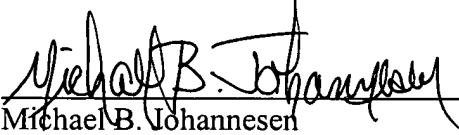

V.   CONCLUSION

In view of the foregoing, Applicants respectfully submit that all claims are patentable. Further, Applicants' have met all of the requirements for accelerated examination set forth in 37 C.F.R. § 1.102 and detailed in MPEP § 708.02(VIII). Accordingly, Applicants respectfully request this case be made special for expedited examination. Please charge the required fee set forth in 37 C.F.R. § 1.17(h), estimated to be $130.00, to Deposit Account No. 501358.

Applicants' undersigned attorney may be reached by telephone at (973) 597-2500.

All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

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